CLAIMS

The invention claimed is:

1. An apparatus for sensing the type of fuel being added to a fuel tank comprising:

(a) a vent tube operatively connecting said fuel tank to the atmosphere;

(b) a valve configured to close said vent tube whereby back pressure in said fuel tank may be increased;

(c) a valve actuator operatively affixed to said valve to open and close said valve; and

(d) a sensing unit operatively connected to said valve actuator and configured to measure a predetermined physical or chemical characteristic of said fuel being added to said fuel tank through a filler neck, comparing said measured characteristic to predetermined values, and causing said valve actuator to open or close depending upon the results of said comparison.

2. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **1** wherein said sensing unit operatively connected to said valve actuator and configured to measure a predetermined physical or chemical characteristic of said fuel being added to said fuel tank through said filler neck, comparing said measured characteristic to a predetermined value, and causing said valve actuator to close said valve if said comparison indicates the values are above or below said predetermined pre.

3. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **2** further comprising a surge protector to prevent said addition of fuel from contacting said sensor.

4. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **1** further comprising a deflector for preventing said addition of fuel from contacting said sensor.

5. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **1** further comprising a deflector for preventing said addition of fuel from contacting said sensor.

6. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **1** further comprising an alarm unit comprising a visual and audible alarm indicator, operating indicator, test and reset switches.

7. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **6** further comprising a surge protector to prevent said addition of fuel from contacting said sensor.

8. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **7** further comprising a deflector for preventing said addition of fuel from contacting said sensor.

9. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **6** further comprising a deflector for preventing said addition of fuel from contacting said sensor.

10. An apparatus for sensing the type of fuel being added to a fuel tank according to claim **1** further comprising a solenoid operatively connected to said valve for opening and closing said valve.

11. A method for monitoring the addition of fuel to a fuel tank comprising the step(s) of:

(a) measuring the vapor pressure of said fuel to said fuel tank by a sensor;

(b) comparing said measured vapor pressure to a known vapor pressure to determine if said vapor pressure is equal to said known vapor pressure; and

(c) making a logical determination based on said comparison to open or close a valve to permit fuel flow to said fuel tank wherein said valve is positioned in an atmospheric vent tube.

12. A method for monitoring the addition of fuel to a fuel tank comprising the step(s) of:

(a) measuring the vapor pressure of said fuel to said fuel tank by a sensor;

(b) comparing said measured vapor pressure to a known vapor pressure to determine if said vapor pressure is equal to said known vapor pressure; and

(c) making a logical determination based on said comparison to open or close a valve to permit fuel flow to said fuel tank wherein said closing is induced by said sensor sending an electrical closing signal to a solenoid valve positioned in said vent tube.